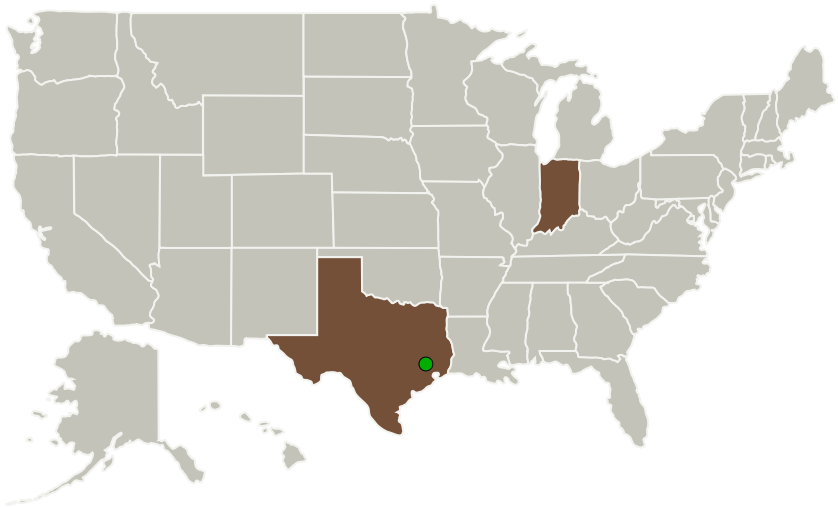
Multi-Specimen Variable-G Facility for Life and Microgravity Sciences Research, Phase I

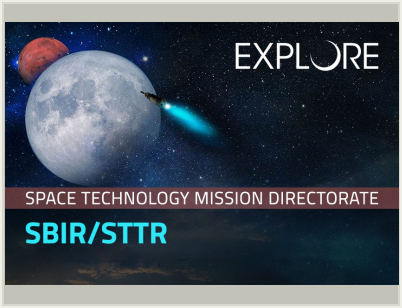
Completed Technology Project (2011 - 2011)

Project Introduction

Techshot, Inc. proposes to develop a Multi-specimen Variable-G Facility (MVF) for life and microgravity sciences research. The MVF incorporates a generic multi-specimen sample holder which can be accessed on-orbit, allowing data to be obtained in real-time. Candidate specimens accommodated by the MVF include various cells (e.g. for culturing), aquatics, plants, algae, and invertebrate organisms. More specifically, the generic multi-specimen container can be utilized as a prokaryotic and eukaryotic cell culture vessel. It can be used to contain aquatic organisms such as Zebra fish, Medaka, tadpoles, and even developing amphibian eggs. Seedlings, small adult plants (Arabadopsis), and even fern spores could be located within the specimen container. Other possibilities include Algae (Chara), fungi (S. cerevisiae), as well as invertebrate organisms such as C. elegans and Drosophila sp. in very large numbers. MVF's distinct advantage is its capability to provide synchronously controlled 1-G specimens in the same environment as the test specimens. More importantly, the innovative curved-wall sample holders within the MVF provide a constant gravitational force to the samples at all specimen locations. Since the MVF builds upon existing flight-proven technology, the long scientific hardware development cycle will be significantly reduced, translating into higher scientific throughput of ISS.

Primary U.S. Work Locations and Key Partners





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Organizations Performing Work	Role	Type	Location
Techshot, Inc.	Lead Organization	Industry	Greenville, Indiana
Johnson Space Center(JSC)	Supporting Organization	NASA Center	Houston, Texas

Primary U.S. Work Locations	
Indiana	Texas

Project Transitions

February 2011: Project Start

September 2011: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/140186)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Techshot, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

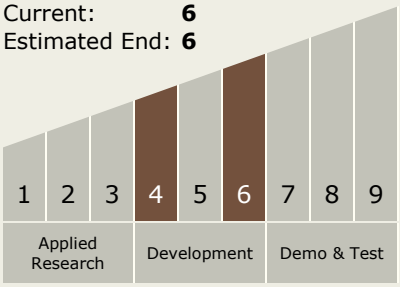
Carlos Torrez

Principal Investigator:

John C Vellinger

Technology Maturity (TRL)

Start: **4**
Current: **6**
Estimated End: **6**



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Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.4 Collaborative Science and Engineering

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System